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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/066,529	01/31/2002	Ronald A. Askeland	100201207-1	3681

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EXAMINER	
NGUYEN, LAM S	

ART UNIT	PAPER NUMBER
2853	

DATE MAILED: 09/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/066,529	ASKELAND ET AL.	
	Examiner	Art Unit	
	LAM S. NGUYEN	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 July 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3-11,21,22,24,25,27,28 and 30-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3-11,21,22,24,25,27,28 and 30-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01/31/2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 3, 24, 27, 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Smith et al. (US 4791435).

Smith et al. discloses a printhead temperature control system, comprising:

Referring to claims 24, 27, 31:

a printhead assembly having a plurality of ejection elements (*column 2, lines 5-12: A corresponding element that causes ink firing through a nozzle*);

a temperature sensor configured to generate a measured temperature of the printhead assembly (*column 1, lines 57-66 and column 4, lines 30-41*);

a memory device configured to store a thermal response model of the printhead assembly and an ejection history of the ejection elements (*column 1, line 53 to column 2, line 2: A corresponding memory stores thermal models of the pens or printheads and the profiles of use of the nozzles*);

a controller (*FIG. 2A, element 2*) configured to estimate an actual temperature of the printhead assembly on the measured/current operating temperature of the printhead assembly, the thermal response model of the printhead assembly, and the ejection history (current operating parameters) of the ejection elemetns (*column 4, lines 38-40: Such temperature*

sensors are used to provide the input needed to estimate the printhead temperature. Column 1, lines 64-67: Thermal models of the pens or printheads are provided and these are used in conjunction with printhead temperature sensors to provide the information useful in controlling the printhead temperature. Column 1, line 68 to column 2, line 2: Profiles of the use of the nozzles compared with a thermal model provide information useful in controlling head temperature. Column 1, lines 15-19: The printhead temperature varies with the use profile of the printhead),

wherein the ejection history of the ejection elements identifies whether the ejection element have been fired and whether the ejection elements have not been fired (*column 2, lines 20-37*), and wherein the thermal response model of the printhead assembly includes a first set of parameters when the ejection elements have been fired and a second set of parameters when the ejection elements have not fired (*column 2, lines 1-25: Two set parameters, each regards to low temperature mode if the ejection elements have not been fired and high temperature mode if the ejection elements have been fired, may include parameters of low energy pulses for warming purpose or parameters of the operable range of a particular nozzle*).

Referring to claim 3: wherein the controller is located on at least one of the printhead or externally on a printer (*FIG. 2A*).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 4-9, 10-11, 21-22, 25, 28, 30, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. (US 4791435) in view of Prakash et al. (US 6302507).

Smith et al. discloses the claimed invention as discussed above and calculating an adjusted pulse width based on the current operating parameters of the printhead and the estimated actual operating temperature of the printhead (*column 2, lines 54-68 and column 4, lines 45-50*), but does not disclose wherein the calculation of the adjusted pulse width is based on pulse width calibration data or based on an optimal operating temperature (**Referring to claims 25, 28, 32**), wherein the pulse width calibration data is in the form of an equation or in a look-up table (**Referring to claims 10-11, 21-22**), wherein the controller reads the pulse width and pulse width calibration data from a memory located on the printhead assembly or a printer associated with the printhead assembly (**Referring to claims 4-5**), wherein the temperature sensor is an analog or digital temperature sensor and further including an analog to digital converter for generating a digital format from the analog temperature sensor (**Referring to claims 6-8**), wherein the temperature sensor includes multiple temperate sensors distributed around the printhead assembly (**Referring to claim 9**).

Prakash et al. discloses a temperature control system for an ink jet printhead assembly having ink ejection elements energizable by an electrical pulse having an amplitude and pulse width (*Abstract*), wherein the temperature control system includes a controller that calculates an adjusted pulse width based on pulse width calibration data (*Abstract*) or based on an optimal operating temperature (*column 13, lines 24-32*), wherein the pulse width calibration data is in the form of an equation or in a look-up table (*claims 10-11*), wherein the controller reads the pulse width and pulse width calibration data from a memory located on the printhead assembly or a

printer associated with the printhead assembly (*claims 4-5*), wherein the temperature sensor is an analog or digital temperature sensor and further including an analog to digital converter for generating a digital format from the analog temperature sensor (*claims 7-8*), wherein the temperature sensor includes multiple temperate sensors distributed around the printhead assembly (*claim 9*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time invention was made to modify the calculation of energy of driving pulse disclosed by Smith et al. also based on pulse width calibration data as disclosed by Prakash et al. The motivation for doing so is to ensure adequate firing energy levels for full drop volume firing in "blackout conditions" as taught by Prakash et al. (*column 11, lines 25-29*).

Response to Arguments

Applicant's arguments, see pages 7-8, filed 07/28/2005, with respect to the 112 rejection referring to claims 24, 27, and 30, have been fully considered and are persuasive. As a result, the 112 rejection of the above claims has been withdrawn and a new ground of rejection is made as above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S. NGUYEN whose telephone number is (571)272-2151. The examiner can normally be reached on 7:00AM - 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, STEPHEN D. MEIER can be reached on (571)272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LN
09/11/2005

HAI PHAM
PRIMARY EXAMINER